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EXAMINER	
AL NAZER, LEITH A	
ART UNIT	**PAPER NUMBER**
2821	

DATE MAILED: 05/02/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/763,392	SCHLUETER ET AL.	
	Examiner	Art Unit	
	Leith A. Al-Nazer	2821	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 January 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-29* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-29* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *26 January 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *15 July 2004*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Specification

1. The disclosure is objected to because of the following informalities:

The "Description of Drawings" section does not address figures 5a and 5b separately.

Appropriate correction is required.

Claim Objections

2. Claims 11, 12, 24, and 25 are objected to because of the following informalities:

Claims 11 and 24 recite a "third window surface". Respective parent claims 1 and 14 recite a "first window surface". However, in claims 11 and 24, as well as respective parent claims 1 and 14, there is no recitation of a "second window surface".

Appropriate correction is required.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-4, 7-13, and 27-29 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 5,854,865 to Goldberg.

With respect to claim 1, Goldberg teaches an optical fiber, comprising: a radial axis; a longitudinal axis; a first window surface (24, 55) having a normal direction that is not parallel to a direction of the radial axis at the first window surface, wherein the first window surface is adapted for receiving pump radiation and transmitting the pump radiation into the optical fiber (figure 4a); a second surface adapted for totally internally reflecting pump radiation received within the optical fiber (column 2, lines 12-28); and an active region (14) within the optical fiber for generating radiation at a characteristic wavelength when pumped with pump radiation.

With respect to claim 2, Goldberg teaches an angle between the normal direction of the first window surface and the direction of the radial axis at the first window surface being greater than about 15 degrees (column 4, lines 12-28).

With respect to claim 3, Goldberg teaches an angle between the normal direction of the first window surface and the direction of the radial axis at the first window surface being greater than about 45 degrees (column 4, lines 12-28).

With respect to claim 4, Goldberg teaches an angle between the normal direction of the first window surface and the direction of the radial axis at the first window surface being greater than about 60 degrees (column 4, lines 12-28).

With respect to claim 7, Goldberg teaches the first window surface being substantially flat (figures 1-3).

With respect to claim 8, Goldberg teaches an angle between a normal direction of the second surface and a direction of the radial axis at the second surface being less than about 30 degrees (figure 3).

With respect to claim 9, Goldberg teaches a normal direction of the second surface being substantially parallel to a direction of the radial axis at the second surface (figure 3).

With respect to claim 10, Goldberg teaches the second surface being curved (figure 3).

With respect to claim 11, Goldberg teaches a third window surface (other half of 24 and 55 in figure 3) having a normal direction that is not parallel to a direction of the radial axis at the third window surface, wherein the third window surface is adapted for receiving pump radiation.

With respect to claim 12, Goldberg teaches the third window surface being substantially flat (figure 3).

With respect to claim 13, Goldberg teaches the active region having a transverse dimension smaller than the characteristic wavelength (column 4, line 30 – column 5, line 60).

With respect to claim 27, Goldberg teaches a method of pumping a fiber laser having a longitudinal axis, a radial axis, and an azimuthal axis, the method comprising: producing a beam of pump radiation (16; figure 3); injecting the beam of pump radiation into the fiber laser in a direction such that the beam of pump radiation has a component along the longitudinal axis, the radial axis, and the azimuthal axis of the fiber laser (figures 1-3).

With respect to claim 28, Goldberg teaches the fiber laser having a window surface (one half of 24 and 55 in figure 3) having a normal direction that is not parallel to

a direction of the radial axis at the first window surface, and wherein the beam of pump radiation is injected into the fiber laser through the first window surface (figures 1-3).

With respect to claim 29, Goldberg teaches the beam of pump radiation being produced by a diode laser array (16).

5. Claims 1, 6-10, 14, 19-23, and 27-29 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 5,923,694 to Culver.

With respect to claim 1, Culver teaches an optical fiber, comprising: a radial axis; a longitudinal axis; a first window surface (34) having a normal direction that is not parallel to a direction of the radial axis at the first window surface, wherein the first window surface is adapted for receiving pump radiation and transmitting the pump radiation into the optical fiber (figure 4); a second surface adapted for totally internally reflecting pump radiation received within the optical fiber (figure 6; column 1, lines 15-45); and an active region (20) within the optical fiber for generating radiation at a characteristic wavelength when pumped with pump radiation.

With respect to claims 6 and 19, Culver teaches the first window surface being substantially parallel to the longitudinal axis of the optical fiber (figure 7).

With respect to claims 7 and 20, Culver teaches the first window surface being substantially flat (figures 4 and 6).

With respect to claims 8 and 21, Culver teaches an angle between a normal direction of the second surface and a direction of the radial axis at the second surface being less than about 30 degrees (figures 4 and 6).

With respect to claims 9 and 22, Culver teaches a normal direction of the second surface being substantially parallel to a direction of the radial axis at the second surface (figures 4 and 6).

With respect to claims 10 and 23, Culver teaches the second surface being curved (figures 4 and 6).

With respect to claim 14, Culver teaches a fiber laser assembly, comprising: (a) an optical fiber, comprising: (1) a radial axis; (2) a longitudinal axis; (3) a first window surface (34) having a normal direction that is not parallel to a direction of the radial axis at the first window surface, wherein the first window surface is adapted for receiving pump radiation and transmitting the pump radiation into the optical fiber (figure 4); (4) a second surface adapted for totally internally reflecting pump radiation received within the optical fiber (figure 6; column 1, lines 15-45); and an active region (20) within the optical fiber for generating radiation at a characteristic wavelength when pumped with pump radiation; (b) a diode laser array (38) adapted for emitting the pump radiation; and (c) an optical element (36) disposed between the diode laser array and the first surface and adapted for guiding pump radiation from the diode laser array to the first window surface of the optical fiber.

With respect to claim 27, Culver teaches a method of pumping a fiber laser having a longitudinal axis, a radial axis, and an azimuthal axis, the method comprising: producing a beam of pump radiation (38); injecting the beam of pump radiation into the fiber laser in a direction such that the beam of pump radiation has a component along

the longitudinal axis, the radial axis, and the azimuthal axis of the fiber laser (figures 4 and 6).

With respect to claim 28, Culver teaches the fiber laser having a window surface (34) having a normal direction that is not parallel to a direction of the radial axis at the first window surface, and wherein the beam of pump radiation is injected into the fiber laser through the first window surface (figures 4 and 6).

With respect to claim 29, Culver teaches the beam of pump radiation being produced by a diode laser array (38).

6. Claims 1-5, 7-13, and 27-29 are rejected under 35 U.S.C. 102(b) as being anticipated by International Application No. WO 95/10868 to Gapontsev et al.

With respect to claim 1, Gapontsev teaches an optical fiber, comprising: a radial axis; a longitudinal axis; a first window surface (window section of 6a in figure 2) having a normal direction that is not parallel to a direction of the radial axis at the first window surface, wherein the first window surface is adapted for receiving pump radiation and transmitting the pump radiation into the optical fiber (figure 2); a second surface (6a and 8) adapted for totally internally reflecting pump radiation received within the optical fiber; and an active region (2) within the optical fiber for generating radiation at a characteristic wavelength when pumped with pump radiation.

With respect to claim 2, Gapontsev teaches an angle between the normal direction of the first window surface and the direction of the radial axis at the first window surface being greater than about 15 degrees (figure 2).

With respect to claim 3, Gapontsev teaches an angle between the normal direction of the first window surface and the direction of the radial axis at the first window surface being greater than about 45 degrees (figure 2).

With respect to claim 4, Gapontsev teaches an angle between the normal direction of the first window surface and the direction of the radial axis at the first window surface being greater than about 60 degrees (figure 2).

With respect to claim 5, Gapontsev teaches the normal direction of the first window surface being substantially perpendicular to the direction of the radial axis at the first window surface (figure 2).

With respect to claim 7, Gapontsev teaches the first window surface being substantially flat (figure 2).

With respect to claim 8, Gapontsev teaches an angle between a normal direction of the second surface and a direction of the radial axis at the second surface being less than about 30 degrees (figure 2).

With respect to claim 9, Gapontsev teaches a normal direction of the second surface being substantially parallel to a direction of the radial axis at the second surface (figure 2).

With respect to claim 10, Gapontsev teaches the second surface being curved (figure 2).

With respect to claim 11, Gapontsev teaches a third window surface (window section of 6b in figure 2) having a normal direction that is not parallel to a direction of

the radial axis at the third window surface, wherein the third window surface is adapted for receiving pump radiation.

With respect to claim 12, Gapontsev teaches the third window surface being substantially flat (figure 2).

With respect to claim 13, Gapontsev teaches the active region having a transverse dimension smaller than the characteristic wavelength (page 5, line 24 – page 7, line 11).

With respect to claim 27, Gapontsev teaches a method of pumping a fiber laser having a longitudinal axis, a radial axis, and an azimuthal axis, the method comprising: producing a beam of pump radiation (4a); injecting the beam of pump radiation into the fiber laser in a direction such that the beam of pump radiation has a component along the longitudinal axis, the radial axis, and the azimuthal axis of the fiber laser (figure 2).

With respect to claim 28, Gapontsev teaches the fiber laser having a window surface having a normal direction that is not parallel to a direction of the radial axis at the first window surface, and wherein the beam of pump radiation is injected into the fiber laser through the first window surface (figure 2).

With respect to claim 29, Gapontsev teaches the beam of pump radiation being produced by a diode laser array (4a).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

9. Claims 14-17 and 20-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,854,865 to Goldberg in view of U.S. Patent No. 5,923,694 to Culver, U.S. Patent No. 6,704,341 to Chang, or U.S. Patent No. 6,721,347 to Mizui et al.

With respect to claim 14, Goldberg teaches a fiber laser assembly, comprising: (a) an optical fiber, comprising: (1) a radial axis; (2) a longitudinal axis; (3) a first window surface (one half of 24 and 55 in figure 3) having a normal direction that is not parallel to a direction of the radial axis at the first window surface, wherein the first window surface is adapted for receiving pump radiation and transmitting the pump radiation into the optical fiber (figure 4a); (4) a second surface adapted for totally internally reflecting pump radiation received within the optical fiber (column 2, lines 12-28); and an active region (14) within the optical fiber for generating radiation at a characteristic wavelength when pumped with pump radiation; (b) a diode laser array (16) adapted for emitting the

pump radiation. Claim 14 requires an optical element be disposed between the diode laser array and the first surface and adapted for guiding pump radiation from the diode laser array to the first window surface of the optical fiber. Such a configuration is well known in the art, as is evidenced by Culver (36), Chang (15), or Mizui (31 and 32). Therefore, at the time of the invention, it would have been obvious to one having ordinary skill in the art to utilize an optical element between the diode laser array and the first window surface of the optical fiber in Goldberg. The motivation for doing so would have been to more efficiently pump the active medium in the optical fiber by focusing light more directly at a given target, namely the optical fiber.

With respect to claim 15, Goldberg teaches an angle between the normal direction of the first window surface and the direction of the radial axis at the first window surface being greater than about 15 degrees (column 4, lines 12-28).

With respect to claim 16, Goldberg teaches an angle between the normal direction of the first window surface and the direction of the radial axis at the first window surface being greater than about 45 degrees (column 4, lines 12-28).

With respect to claim 17, Goldberg teaches an angle between the normal direction of the first window surface and the direction of the radial axis at the first window surface being greater than about 60 degrees (column 4, lines 12-28).

With respect to claim 20, Goldberg teaches the first window surface being substantially flat (figures 1-3).

With respect to claim 21, Goldberg teaches an angle between a normal direction of the second surface and a direction of the radial axis at the second surface being less than about 30 degrees (figure 3).

With respect to claim 22, Goldberg teaches a normal direction of the second surface being substantially parallel to a direction of the radial axis at the second surface (figure 3).

With respect to claim 23, Goldberg teaches the second surface being curved (figure 3).

With respect to claim 24, Goldberg teaches a third window surface (other half of 24 and 55 in figure 3) having a normal direction that is not parallel to a direction of the radial axis at the third window surface, wherein the third window surface is adapted for receiving pump radiation.

With respect to claim 25, Goldberg teaches the third window surface being substantially flat (figure 3).

With respect to claim 26, Goldberg teaches the active region having a transverse dimension smaller than the characteristic wavelength (column 4, line 30 – column 5, line 60).

10. Claims 14-18 and 20-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over International Application No. WO 95/10868 to Gapontsev et al. in view of U.S. Patent No. 5,923,694 to Culver, U.S. Patent No. 6,704,341 to Chang, or U.S. Patent No. 6,721,347 to Mizui et al.

With respect to claim 14, Gapontsev teaches a fiber laser assembly, comprising: (a) an optical fiber, comprising: (1) a radial axis; (2) a longitudinal axis; (3) a first window surface (window section of 6a in figure 2) having a normal direction that is not parallel to a direction of the radial axis at the first window surface, wherein the first window surface is adapted for receiving pump radiation and transmitting the pump radiation into the optical fiber (figure 2); (4) a second surface (6a and 8) adapted for totally internally reflecting pump radiation received within the optical fiber; and an active region (2) within the optical fiber for generating radiation at a characteristic wavelength when pumped with pump radiation; (b) a diode laser array (4a) adapted for emitting the pump radiation. Claim 14 requires an optical element be disposed between the diode laser array and the first surface and adapted for guiding pump radiation from the diode laser array to the first window surface of the optical fiber. Such a configuration is well known in the art, as is evidenced by Culver (36), Chang (15), or Mizui (31 and 32). Therefore, at the time of the invention, it would have been obvious to one having ordinary skill in the art to utilize an optical element between the diode laser array and the first window surface of the optical fiber in Gapontsev. The motivation for doing so would have been to more efficiently pump the active medium in the optical fiber by focusing light more directly at a given target, namely the optical fiber.

With respect to claim 15, Gapontsev teaches an angle between the normal direction of the first window surface and the direction of the radial axis at the first window surface being greater than about 15 degrees (figure 2).

With respect to claim 16, Gapontsev teaches an angle between the normal direction of the first window surface and the direction of the radial axis at the first window surface being greater than about 45 degrees (figure 2).

With respect to claim 17, Gapontsev teaches an angle between the normal direction of the first window surface and the direction of the radial axis at the first window surface being greater than about 60 degrees (figure 2).

With respect to claim 18, Gapontsev teaches the normal direction of the first window surface being substantially perpendicular to the direction of the radial axis at the first window surface (figure 2).

With respect to claim 20, Gapontsev teaches the first window surface being substantially flat (figure 2).

With respect to claim 21, Gapontsev teaches an angle between a normal direction of the second surface and a direction of the radial axis at the second surface being less than about 30 degrees (figure 2).

With respect to claim 22, Gapontsev teaches a normal direction of the second surface being substantially parallel to a direction of the radial axis at the second surface (figure 2).

With respect to claim 23, Gapontsev teaches the second surface being curved (figure 2).

With respect to claim 24, Gapontsev teaches a third window surface (window section of 6b in figure 2) having a normal direction that is not parallel to a direction of

the radial axis at the third window surface, wherein the third window surface is adapted for receiving pump radiation.

With respect to claim 25, Gapontsev teaches the third window surface being substantially flat (figure 2).

With respect to claim 26, Gapontsev teaches the active region having a transverse dimension smaller than the characteristic wavelength (page 5, line 24 – page 7, line 11).

Citation of Pertinent References

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The following patent documents further show the state of the art with respect to side-pumped fiber laser configurations:

a. U.S. Patent No. 4,815,079 to Snitzer et al.

b. U.S. Patent No. 5,033,058 to Cabaret et al.

c. U.S. Patent No. 5,636,239 to Bruesselbach et al.

d. U.S. Patent No. 5,640,408 to Jani et al.

e. U.S. Patent No. 5,999,673 to Valentin et al.

f. U.S. Patent No. 6,038,244 to Usui et al.

g. U.S. Patent No. 6,075,803 to Bull et al.

h. U.S. Patent No. 6,370,297 to Hakimi et al.

i. U.S. Patent No. 6,594,299 to Hirano et al.

j. U.S. Patent No. 6,608,852 to Govorkov et al.

k. U.S. Patent No. 6,621,849 to Thro et al.

l. U.S. Patent No. 6,697,409 to Sekiguchi

m. U.S. Patent No. 6,704,479 to Koplow

n. U.S. Patent No. 6,865,213 to Perry et al.

o. U.S. Patent Application Publication No. 2005/0281508 to Krupkin et al.

p. European Patent Document No. EP 1 213 802 A2 to Goldberg

Communication Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leith A. Al-Nazer whose telephone number is 571-272-1938. The examiner can normally be reached on Monday-Friday, 7:30-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Callahan can be reached on 571-272-1740. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

LA

HOANG V. NGUYEN
PRIMARY EXAMINER